

Frequency of HIV seropositivity in patients with sexually transmitted infections presenting in the dermatology department of a tertiary care hospital

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Abstract

Introduction As the Human Immunodeficiency virus/ Acquired Immunodeficiency Syndrome (HIV/AIDS) continue to advance worldwide, sexually transmitted infections (STIs) rates remain high in much of the world. Each year about 330 million new cases of STIs occur, of which more than 90% are in developing countries. Prevalence of HIV in people effected with STIs is 10 times more as compared to general population i.e. 10%.

Objectives To determine the frequency of HIV in patients who are presenting for the treatment of STIs in dermatology department of tertiary care hospital.

Methods A descriptive cross-sectional study was conducted in the Department of Dermatology, KEMU/Mayo Hospital, Lahore in collaboration with Punjab AIDS Control Program (PACP). Study was carried out over a period of six months from 20-12-2016 to 19-06-2017. A total of 285 patients were included in the study. Whole blood sample was taken and tested for HIV using kit provided by PACP. Patients were also evaluated and investigated for the type of their STI and medications given for treatment of their STIs. HIV was confirmed by ELISA and they were referred to HIV clinic Mayo hospital, Lahore for further management.

Results Mean age of the patients was 30 years. There were 153 males (53.7%), 121 females (42.5%) while 11 patients (3.8%) were hijras. Married patients were 55% and 45% patients were unmarried. Sexual orientation vise there were 8.8% homosexuals, 87.7% heterosexuals and 3.5% bisexuals. Out of 285 patients, 34% used condoms. History of blood transfusion was found in 4%. History of IV drug abuse was given by 5%. Types of STIs were as follows: warts 36%, secondary syphilis 20%), scabies 20%, tinea cruris 9%, vaginal discharge 11%), gonorrhoea 2%), and genital herpes 3%). Majority of the patients (88%) had 1-4 sexual partners. HIV positive patients found among these patients with STIs were 24 (8%).

Conclusion In conclusion, the frequency of HIV among patients with STIs was 8%. To prevent HIV/STIs, campaigns promoting condom use are needed to boost the frequency of condom use.

Key words

Sexually transmitted infections, HIV, ELISA.

Introduction

Human immunodeficiency virus (HIV) is a

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member of the genus Lentivirus part of the family Retroviridae that causes Acquired Immunodeficiency Syndrome (AIDS).^{1,2} Infection occurs by transmission through blood, semen, pre-ejaculate, vaginal secretions or breast milk.³ Within the body. The HIV may persist either as free particles or within infected

immune cells. First known case of HIV in humans occurred in 1960 in Congo.³ First cases of AIDS were observed in USA in 1981 in intravenous drug abusers and gay men.^{3,4} Since its discovery, the number of patients affected with HIV/AIDS is ever increasing and by the end of year 2018 the people living with HIV/AIDS globally were 37.9 million.⁵

In Pakistan the first case of HIV/AIDS was reported in 1987.⁶ According to National AIDS Control Program (NACP) the number of cases of HIV/AIDS is increasing annually.⁷ In Pakistan, HIV prevalence among the general population is estimated to be less than 0.1%, with 165 000 people living with HIV. As of June, 2019, 24 331 people (14.7%) are registered with the NACP, up from 4500 in 2013.^{7,8}

The main source of transmission of HIV in Pakistan were the people living abroad who were infected with HIV and upon their return, transmitted the virus to their wives and subsequently to their offsprings.⁶ Pakistan has entered in "Countries In Transition" with a concentrated epidemic in High Risk Groups (HRGs) in last five years. The prevalence of HIV in general population is almost 1%.⁹ The number of people might be in much more if proper HIV screening is carried out.⁹

The WHO estimates indicate that approximately 340 million new cases of the 4 main curable STIs namely gonorrhoea, chlamydial infection, syphilis, and trichomoniasis occur every year; 75-85% of them in developing countries.¹⁰ The global burden of sexually transmitted infections (STIs) remains high. In 2016, there were an estimated 376 million new infections (more than 1 million per day) of the four curable STIs—chlamydia, gonorrhoea, syphilis and trichomoniasis. The burden of viral STIs is similarly high, with an estimated 417 million prevalent cases of herpes simplex virus infection

and approximately 291 million women infected with human papillomavirus (HPV). In contrast, many countries have achieved successful control of chancroid and lymphogranuloma venereum infections, which have nearly disappeared

STIs are caused by almost 30 different type of bacteria, viruses and protozoa. These are acquired through vaginal, anal or oral sex and are one of the top 5 causes for which people seek clinical care.¹¹ These are a major cause of ill health and are a significant burden on health care services.¹² Globally more than one million people acquire STIs daily according to WHO reports.¹² STIs are a major emerging healthcare problem in Pakistan. A study conducted in 6 major cities of Pakistan in 2008 showed that 4.4% of population is affected with one of the 5 types of STIs.¹³ These figures might be underestimation as social, cultural, moral and educational barriers prevent local population presentation to healthcare services for treatment of STIs. HRGs (sex workers. IV drug users) might have even higher prevalence.¹⁴⁻¹⁶

HIV is also included in the spectrum of STIs. There is an epidemiological synergy between STIs and HIV. Having an STI increases the risk of acquiring HIV. People with certain types of STIs (syphilis, gonorrhoea and herpes) are more likely to get HIV as compared to other STIs.¹⁷⁻¹⁹ Many studies have been done nationally as well as internationally that shows a correlation between HIV and STIs. Prevalence of HIV in people effected with STIs is 10 times more as compared to general population i.e. 10%.¹¹

The rationale behind the study was to determine the prevalence of HIV in general population who are presenting for the treatment of STIs. This will help us in determining the prevalence of HIV in people presenting with STIs in our local population. It will also help in preventing the further spread of HIV in our settings by timely

diagnosing, treating, educating and referring the patient to Punjab Aids Control Program (PACP) with whose collaboration this research was carried out. It will also provide a database for national and international agencies who are working for control of HIV/AIDS.

Material and Methods

It was descriptive cross-sectional study conducted at the Department of Dermatology, KEMU/Mayo Hospital, Lahore in collaboration with Punjab AIDS Control Program. Study was carried out over a period of six months from 20-12-2016 to 19-06-2017. A sample of 285 patients was calculated by using 95% confidence level and 3.5% margin of error and taking expected percentage of HIV in STIs as 10%.⁷ Non-probability consecutive sampling technique was employed.

Patients of either sex from ages between 14 to 65 years with STIs presenting in dermatology department of Mayo Hospital Lahore who gave written informed consent were included in the study. Patients already on treatment for HIV and those with immunosuppressive diseases were excluded from the study.

Informed written consent was taken and protocol of research was explained to every patient. Detailed demographic profile (name, age, sex) and history was recorded. Whole blood samples were taken and tested for HIV using ELISA kit provided by PACP. Patients were also evaluated and investigated for the type of their STI and medications were given for treatment of their STIs. HIV was confirmed by ELISA and they were referred to HIV clinic, Mayo Hospital, Lahore for further management. The counseling was done by a clinical psychologist of PACP.

Data entry and analysis was done by using SPSS version 18. Qualitative data (gender, marital

status, occupation, sexual orientation, condom use, blood transfusion, IV drug abuse, and type of STIs) were presented by using frequency tables and percentages. Quantitative data (Age distribution, Number of sexual partners) were presented by using mean and SD. p-value ≤ 0.05 was taken as significant. Data were stratified for age, gender, marital status, number of partners and sexual orientation. Post-stratification Chi-Square test was applied taking p value ≤ 0.05 as significant

Results

A total of 285 patients were included in this study during the study period of six months from 20-12-2016 to 19-06-2017. Mean age of the patients was 30.1 ± 7.7 years. There were 153 males (53.7%), 121 females (42.5%) while 11 patients (3.8%) were hijras. Married patients were 157 (55.1%) and 128 patients (44.9%) were unmarried. Distribution of patients by occupation was also noted (**Table 1**).

Table 1 Distribution of patients by occupation, history of blood transfusion and IV drug abuse

Occupation	Number (%)
Jobless	123 (43.2%)
Maid	30 (10.5%)
Driver, shopkeeper, farmer, labourer, hotel worker	50 (17.5%)
Female sex worker	59 (20.7%)
Work abroad, lawyer, teacher, banker, engineer	23 (8.1%)
Blood transfusion	11 (3.9%)
IV drug abuse	13 (4.5%)

Table 2 Type of sexually transmitted infections (STIs)

STIs	Number (%)
Warts	102(35.8%)
Secondary syphilis	58(20.4%)
Scabies	56(19.6%)
Tinea cruris	26(9.1%)
Vaginal discharge	30(10.5%)
Gonorrhoea	6(2.1%)
Genital Herpes	7(2.5%)
Total	285(100%)

Table 3 Stratification for age, gender, marital status, number of partners and sexual orientation

		HIV		Total Patients 285	P value
		Positive 24(8.4%)	Negative 261 (91.6%)		
Age	20-40	21	236	257	P=0.645
	41-60	03	25	28	
Gender	Male	15	138	153	P=0.462
	Female	9	112	121	
	Hijras	0	11	11	
Marital status	Married	11	146	157	P=0.341
	Unmarried	13	115	128	
Number of partners	1-4	20	230	250	P=0.494
	5-8	4	31	35	
Sexual orientation	Homosexual	2	23	25	P=0.406
	Heterosexual	20	230	250	
	Bisexual	2	8	10	

Table 4 Stratification for type of STIs

Type of STIs	HIV		Total	P value
	Positive	Negative		
Warts	10	92	102	0.404
Secondary Syphilis	5	53	58	
Scabies	2	54	56	
Tinea cruris	2	24	26	
Vaginal discharge	3	27	30	
Gonorrhoea	1	5	6	
Genital Herpes	1	6	7	
Total	24	261	285	

Sexual orientation revealed homosexual 25 (8.8%), heterosexual 250 (87.7%) and bisexual 10 (3.5%). Out of 285 patients, 97 (34.0%) used condoms. History of blood transfusion found in 11 patients (3.9%). History IV drug abuse given by 13 patients (4.5%), (**Table 1**). Types of sexually transmitted infections (STIs) showed warts to be the commonest STI (35.8%) (**Table 2**). Majority of the patients 250 (87.7%) had 1-4 sexual partners. HIV positive patients among these patients were 24 (8.4%) (**Table 3**). Stratification with regard to age, gender, marital status, number of partners, sexual orientation and type of STIs was also carried out (**Tables 3 & 4**).

Discussion

STIs have been shown to increase the risk of acquiring and transmitting HIV infection. In

women this association has been principally observed in the presence of genital ulcer disease and cervicitis, which disrupt the epithelial barrier, cause local inflammation, and increase genital tract viral load.²⁰

HIV transmission has been shown to be strongly associated with repeated STIs and sexual behavior. HIV and STIs are linked in that both are transmitted by unprotected sexual behavior, the presence of an STI can facilitate the acquisition and transmission of HIV infection, and some STI pathogens may be more virulent in the presence of HIV-related immunodeficiency. The prompt diagnosis and subsequent treatment of an STI can decrease an individual's risk of HIV infection, although not all STI interventions may reduce HIV transmission. Various models have suggested that STI treatment may have the greatest impact

on HIV transmission rate early in a regional HIV epidemic.^{21,22} Due to the documented synergy between HIV and STIs, it has been suggested that the rapid diagnosis and treatment of STIs could serve as a cost-effective HIV prevention strategy.²³

In our study the mean age of the patients was 30 years. Amin *et al.* also found the mean age to be 26 years in their study with younger age group to be presenting with STIs.²⁴ Similar results were seen in other studies.^{25,26} This age group seems to be more sexually active with history of multiple partners.

There were 153 males (53.7%), 121 females (42.5%) while 11 patients (3.8%) were hijras in this study. Males were also higher in number in other studies presenting with STIs. Similar findings were observed by Amin *et al.* and others.^{24,27} Most of the patients in our study were married which concurs with the study by Choudhry *et al.*²⁸

Sexual orientation vise majority of the patients were heterosexual (87.7%) while homosexuality was reported in 8.8% and bisexuality in 3.5% of cases. Majority of the patients 250 (87.7%) had 1-4 sexual partners. Extramarital relations were reported to be a risk factor among males while marital exposure among female patients was a significant cause of infections in the study by Amin *et al.* and Narayan *et al.*^{24, 29}

There were 4.5% IV drug users in our study. Recent studies have documented high rates of STIs within various groups, such as men who drink alcohol and engage in high-risk behavior.³⁰ Men who have sex with men female sex workers and IV drug users.³¹⁻³³ In the study by Devi *et al.* contact with female sex workers was significantly high.^{24,29,34}

Premarital and extramarital sexual relations were

significant risk factors noted in males, while marital sexual exposure was a significant cause of infection in females. This is in corroboration with findings of Narayan B who noted similar profile of patients.²⁹ History of sexual encounter with Female Sex Worker (FSW) was noted in 6.2% males unlike Devi *et al.* where 69.7% of patients had history of sex with FSW.³⁴

Out of 285 patients, 97 (34.0%) used condoms. In addition to unprotected sexual intercourse, STIs have been shown to be independent facilitators of HIV transmission and acquisition.³⁵ These findings are comparable to present study where 66% of the patients did not use condoms.

Recent studies have documented varying rates of STIs among South Asian cohorts. In a cohort of slum dwellers in Bangladesh, a high rate (>5%) of syphilis was documented.³⁶ A study conducted among high-risk women in Western India found similar rates of trichomoniasis and chlamydia as this study, but much higher rates of gonorrhoea.³² The commonest STI in Amin *et al.* study was scabies and genital ulcers in the study by Sarkar *et al.* which is different from our study.^{24,37} We found genital warts to be the commonest infection in our study followed by syphilis. Results of study by Vora *et al.* also concurred with ours.³⁸

In our study 24 (8.4%) HIV-positive patients were found concurrently occurring with STIs. This is a significantly high number being reported in Pakistan. In India the HIV seropositivity was found to be much less in STI patients in various studies (1.3%, 4.2%) and 2.48%.^{24,37,38} This increase could be due to increase in the number of STI cases among the relatively more populous younger population in our country. This increase may also be attributed to the growing awareness among patients who previously were unaware of their disease or did

not know the right destination to seek medical care.

Stratification with regard to age, gender, marital status, number of partners, sexual orientation and type of STIs also carried out for HIV positive cases. The relative prevalence and risk of developing specific STIs can vary widely across different regional settings.³⁹ It has been suggested that STI treatment interventions can contribute substantially to the prevention of HIV infection in populations with early and concentrated sexually transmitted HIV epidemics.

Conclusion

In conclusion, the frequency of HIV positive cases among patients with STIs was 8.4%. To prevent HIV/STIs, campaigns promoting condom use are needed to boost the frequency of condom use. STI management strategies may help to slow the continued spread of HIV in Pakistan. Additionally, sexual histories and partner management should be a standard component of clinical care at STI clinics and centers providing voluntary counseling and testing (VCT) services for HIV.

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